FEM 1.209: 290475/987

APR 1 1987

COMPLETED

FLOOD INSURANCE STUDY

COUNTY OF PLATTE, MISSOURI

UNINCORPORATED AREAS

REVISED:

JUNE 4, 1987

Federal Emergency Management Agency

COMMUNITY NUMBER - 290475

ORIGINAL

BEST COPY AVAILABLE

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1
1.1	Purpose of Study	1
1.2	Coordination	1
1.3	Authority and Acknowledgements	1
2.0	AREA STUDIED	2
2.1	Scope of Study	2
2.2	Community Description	2
2.3	Principal Flood Problems	4
2.4	Flood Protection Measures	4
3.0	ENGINEERING METHODS	4
3.1	Hydrologic Analyses	4
3.2	Hydraulic Analyses	5
4.0	FLOOD PLAIN MANAGEMENT APPLICATIONS	6
4.1	Flood Boundaries	6
4.2	Floodways	7
5.0	INSURANCE APPLICATION	14
5.1	Reach Determinations	14
5.2	Flood Hazard Factors	15
5.3	Flood Insurance Zones	15
5.4	Flood Insurance Rate Map Description	16

BEST COPY AVAILABLE

TABLE OF CONTENTS (continued)

		Page
6.0	OTHER STUDIES	16
7.0	LOCATION OF DATA	16
8.0	REFERENCES AND BIBLIOGRAPHY	19
9.0	REVISIONS DESCRIPTION (Revised June 4, 1987)	21
9.1	Purpose	21
9.2	Acknowledgments	21
9.3	Scope	21
9.4	Hydrologic and Hydraulic Analyses	21
9.5	Other Studies	21
9.6	Location of Data	21
9.7	References and Bibliography	22

FIGURES

Figure 1 -	Vicinity Map	3
Figure 2 -	Floodway Schematic	14

TABLES

Table 1 -	Summary of Discharges	5
Table 2 -	Floodway Data	8
Table 3 -	Flood Insurance Zone Data	17

BEST COPY AVAILABLE

TABLE OF CONTENTS (continued)

EXHIBITS

Exhibit 1 - Flood Profiles

Missouri River	Panels	01P - 04P
Grove Creek	Panel	05P
Brills Creek	Panel	06P
Walnut Creek	Panels	07P - 09P
Burlington Creek	Panel	10P
Platte River	Panel	11P
Brush Creek	Panel	12P
Bee Creek	Panel	13P
Bee Creek Tributary	Panel	14P

Exhibit 2 - Flood Boundary and Floodway Map Index
Flood Boundary and Floodway Map

PUBLISHED SEPARATELY:

Flood Insurance Rate Map Index
Flood Insurance Rate Map

BEST COPY AVAILABLE

NOTICE TO
FLOOD INSURANCE STUDY USERS

Individual components of this Flood Insurance Study (i.e., text, tables, profiles, and maps) are subject to revision as additional data become available. Because revised components may be issued separately, study users should consult the community map repository for those components that are currently effective.

In cases where this Flood Insurance Study and any components thereof warrant revision, a Revisions Description section may be incorporated into this text. When applicable, study users should refer to the Revisions Description to obtain pertinent data and information concerning revisions.

BEST COPY AVAILABLE

FLOOD INSURANCE STUDY

UNINCORPORATED AREAS OF
PLATTE COUNTY, MISSOURI

1.0 INTRODUCTION

1.1 Purpose of Study

The purpose of this Flood Insurance Study is to investigate the existence and severity of flood hazards in the unincorporated areas of Platte County, Missouri, and to aid in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. Initial use of this information will be to convert the unincorporated areas of Platte County to the regular program of flood insurance by the Federal Insurance Administration. Further use of the information will be made by local and regional planners in their efforts to promote sound land use and flood plain management.

1.2 Coordination

Basic data research was coordinated through and centered with Platte County officials. The Missouri Department of Natural Resources, the Water Resources Division of the U. S. Geological Survey (USGS), the Soil Conservation Service (SCS), and local residents of the area were contacted and supplied basic flood information. Coordination for this study included meetings with officials of the county, the Federal Insurance Administration, and the U. S. Army Corps of Engineers (COE), Kansas City District, on September 24, 1976, for the purpose of data collection and on February 16, 1978, to discuss floodway criteria. The Mid-America Regional Council was contacted to obtain aerial photography for the updating of map features and descriptive historical information. A final meeting to review this report was held with the above-mentioned groups on November 21, 1978. The study was accepted.

1.3 Authority and Acknowledgements

The source of authority for this Flood Insurance Study is the National Flood Insurance Act of 1968, as amended.

The hydrologic and hydraulic analyses for this study were performed by the U. S. Army Corps of Engineers, Kansas City District, for the Federal

BEST COPY AVAILABLE

Insurance Administration, under Inter-Agency Agreement No. H-10-77, Project Order No. 8. This work, which was completed in November 1977, covered all significant flooding sources affecting the unincorporated areas of Platte County.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the unincorporated areas of Platte County. The area of study is shown on the Vicinity Map (Figure 1).

The areas studied by detailed methods were selected with priority given to all known flood hazard areas, areas of projected development and proposed construction until September 1982. The scope and methods of study were proposed to and agreed upon by the Federal Insurance Administration and the community.

The Missouri River, within the county limits; Walnut Creek, from 3,200 feet downstream of Walnut Creek Road to 7,200 feet upstream of Walnut Creek Road; and Burlington Creek, within the Platte County limits, were studied in detail.

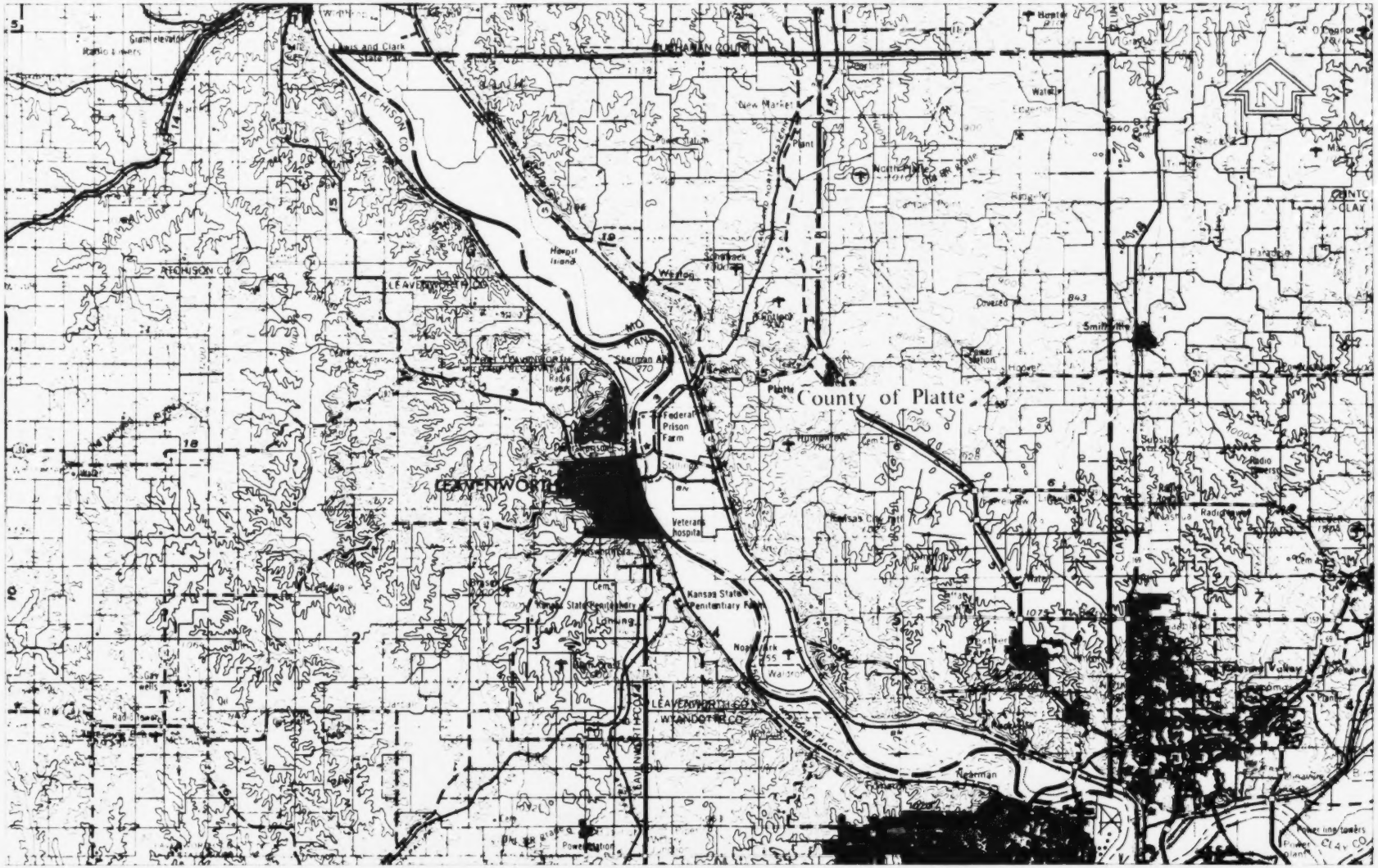
2.2 Community Description

Platte County is located in west-central Missouri and lies northwest of Kansas City, Missouri. Platte County contains part of the Kansas City incorporated area. It is bounded by Buchanan County, Missouri, on the north, Clinton County and Clay County, Missouri, on the east, and Wyandotte, Leavenworth, and Atchison Counties, Kansas, on the south and west. Platte County was first recognized in 1837 as a county. The county is primarily unincorporated with a population of 32,081. The incorporated cities in the county are Kansas City, Parkville, Riverside, Northmoor, Platte City, Tracy, Farley, Dearborn, Edgerton, and Weston.

The climate in Platte County is typical of the Kansas City area. Temperatures range from a high of 113 degrees Fahrenheit (F.) as recorded in August 1936, to a low of -22 degrees F. as recorded in February 1899. The average maximum temperature in the area is 64.8 degrees F.; the average minimum temperature is 46.3 degrees F. The average annual precipitation in the area is 36.70 inches, based on records from 1935 to 1974. The heaviest rainfall is expected during the spring and summer months. The heaviest precipitation recorded for a 24-hour period was 7.03 inches in September 1914. Humidity is normally greater than 60 percent due to the abundance of precipitation, the numerous rivers, and the current of warm, moist air from the Gulf of Mexico.

The soils of the area are generally fine loams and loess. The topography of the land is very flat in the flood plains; however, there are some bluffs near the Platte County line in the north and east.

BEST COPY AVAILABLE



FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

APPROXIMATE SCALE

5 0 5 10 15 MILES

VICINITY MAP

FIGURE 1

BEST COPY AVAILABLE

Three large streams affect Platte County: the Missouri River, the Platte River, and the Little Platte River. Platte County is primarily agricultural with a few commercial grain industries. Except for one or two power plants, there is very little flood plain development along the Missouri River in Platte County. The flood plains of Burlington and Walnut Creeks consist of fully developed residential areas. The county is under development pressures from Kansas City and Kansas City International Airport.

2.3 Principal Flood Problems

The Missouri River, the Platte River, and the Little Platte River are the principal flood threats. The rivers flood often with considerable damages, most notably in 1844, 1903, 1947, and 1964.

2.4 Flood Protection Measures

Many flood protection measures are in place to help Platte County. A number of flood control reservoirs and levees which primarily retain the 100-year flood have been built on the Missouri River, and one reservoir has been built on the Little Platte River. Many low frequency private agricultural levees have been built along the Platte River.

3.0 ENGINEERING METHODS

For flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Floods having recurrence intervals of 10-, 50-, 100-, and 500-years have been selected as having special significance for flood plain management and for flood insurance premium rates. The analyses reported here reflect current conditions in the watersheds of the streams.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for floods of the selected recurrence intervals for each flooding source studied in detail in the community.

For the Missouri River, discharges were computed from flow records after 1933 at the Hannibal Street gage in Kansas City, Missouri, which has 29 years of record (Reference 1). For Walnut and Burlington Creeks, the Environmental Protection Agency Storm Water Management Model, as adapted by the COE, was used. The Environmental Protection Agency Model determines discharges by developing a storm hydrograph from rainfall intensity data. The model takes into consideration the amount of infiltration and detention storage (Reference 2). All of the above analyses followed the standard log-Pearson Type III method as outlined by the U.S. Water Resources Council (Reference 3). Hydrologic methodology and discharges for Grove Creek, Brills Creek, the Platte River, Brush Creek, Bee Creek, and Bee Creek Tributary were obtained from Flood Insurance Studies for Edgerton, Weston, Platte City, Kansas City, and Dearborn, respectively (References 4, 5, 6, 7, and 8).

BEST COPY AVAILABLE

Peak discharges for the 10-, 50-, 100-, and 500-year floods of each flooding source studied in detail in the community are shown in Table 1.

TABLE 1: SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (SQ MILES)	PEAK-DISCHARGE (CFS) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
MISSOURI RIVER					
Above Kansas River	427,720	212,000	310,000	350,000	460,000
WALNUT CREEK					
3,320 feet below Walnut Creek Drive	4.0	3,187	5,100	5,700	6,475
BURLINGTON CREEK					
City of Riverside corporate limits	2.68	2,200	3,300	3,850	5,150

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of the streams in the community are carried out to provide estimates of the elevations of the floods of the selected recurrence intervals along each flooding source studied in detail.

Cross sections for all streams were field surveyed. For all detailed study streams, cross sections were located at close intervals above and below bridges and culverts in order to compute the possible backwater effects of these structures.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway is computed (Section 4.2), selected cross section locations are shown on the Flood Boundary and Floodway Map (Exhibit 2).

Channel roughness factors (Manning's "n") for the hydraulic computations were assigned on the basis of field inspection of flood plain areas. Roughness factors for the various streams averaged as follows: 0.019 for the channel and 0.05 for the overbank for the Missouri River; 0.03 for the channel and 0.05 for the overbank for Walnut Creek, and 0.05 for the channel and 0.035 for the overbank for Burlington Creek.

BEST COPY AVAILABLE

Starting water-surface elevations for the Missouri River and Burlington Creek were developed from existing profiles (References 1 and 2). For Walnut Creek, the starting water-surface elevation was the top of the dam spillway near its mouth. Water-surface elevations of floods of the selected recurrence intervals were computed through use of the COE HEC-2 step-backwater computer program (Reference 9). Flood profiles were drawn showing computed water-surface elevations to an accuracy of 0.5 foot for floods of the selected recurrence intervals (Exhibit 1). Hydraulic engineering methodology for Grove Creek, Brills Creek, the Platte River, Brush Creek, Bee Creek, and Bee Creek Tributary were obtained from Flood Insurance Studies for Edgerton, Weston, Platte City, Kansas City, and Dearborn, respectively (References 4, 5, 6, 7, and 8)

The hydraulic analyses for this study are based only on the effects of unobstructed flow. The flood elevations as shown on the profiles (Exhibit 1) are, therefore, considered valid only if hydraulic structures, in general, remain unobstructed and if channel and overbank conditions remain essentially the same as ascertained during this study.

All elevations are referenced from National Geodetic Vertical Datum of 1929 (NGVD); elevation reference marks used in the study are shown on the maps.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

A prime purpose of the National Flood Insurance Program is to encourage state and local governments to adopt sound flood plain management programs. Each Flood Insurance Study, therefore, includes a flood boundary map designed to assist communities in developing sound flood plain management measures.

4.1 Flood Boundaries

In order to provide a national standard without regional discrimination, the 100-year flood has been adopted by the Federal Insurance Administration as the base flood for purposes of flood plain management measures. The 500-year flood is employed to indicate additional areas of flood risk in the community. For each flooding source studied in detail, the boundaries of the 100-year and the 500-year floods have been delineated using the elevations determined at each cross section; between cross sections the boundaries were interpolated using topographic maps photoenlarged to a scale of 1:4800 for Walnut Creek and Burlington Creek, and topographic maps at a scale of 1:24000 for the Missouri River, with a contour interval of 10 feet (Reference 10). The approximate flood boundaires were delineated on the above referenced topographic maps utilizing the boundaries shown on the Flood Hazard Boundary Map (Reference 11). The 100- and 500-year delineations for Grove Creek, Brills Creek, the Platte River, Brush Creek, Bee Creek, and Bee Creek Tributary were obtained from Flood Insurance Studies for Edgerton, Weston, Platte City, Kansas City, and Dearborn, respectively (References 4, 5, 6, 7, and 8). Portions of the Platte River and Bee Creek were delineated using backwater elevations of the Missouri River.

The boundaries of the 100- and 500-year floods are shown on the Flood Boundary and Floodway Map (Exhibit 2). Small areas within the flood boundaries may lie above the flood elevations and, therefore, not be subject

BEST COPY AVAILABLE

to flooding; owing to lack of detailed topographical information or to limitations of the map scale, such areas are not shown. In cases where the 100-year and the 500-year flood boundaries are close together, only the 100-year boundary has been shown.

4.2 Floodways

Encroachment on flood plains, such as artificial fill, reduces the flood-carrying capacity and increases flood heights, thus increasing flood hazard in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the Flood Insurance Program, the concept of a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent flood plain areas, that must be kept free of encroachment in order that the 100-year flood be carried without substantial increases in flood heights. As minimum standards, the Federal Insurance Administration limits such increases in flood heights to 1.0 foot, provided that hazardous velocities are not produced.

The floodways recommended for this study were computed on the basis of equal conveyance reduction from each side of the flood plain, with the exception of some reaches along the Missouri River, where the floodway is based on a negotiated floodway. This negotiated floodway was approved by the Federal Insurance Administration. The results of these computations were tabulated at selected cross sections for each stream segment for which a floodway was computed (Table 2). Due to the impoundment effect of the dam on Walnut Creek, no floodway is shown just upstream of the dam. Portions of the floodway on the Missouri River lie in adjacent Wyandotte and Leavenworth Counties, Kansas. The levees along the Missouri River, which reach from the City of Waldron to Fort Leavenworth Military Reservation, contain the Missouri River floodway. Floodway computations and delineations for Grove Creek, Brills Creek, the Platte River, Brush Creek, Bee Creek, and Bee Creek Tributary were obtained from Flood Insurance Studies for Edgerton, Weston, Platte City, Kansas City, and Dearborn, respectively (References 4, 5, 6, 7, and 8). Portions of the floodway for Brills Creek lie within the City of Weston. Portions of the floodway for the Platte River lie within the Cities of Platte City and Tracy. Portions of the floodway for Brush Creek lie within the City of Kansas City. Portions of the floodways for Bee Creek and Bee Creek Tributary lie within the City of Dearborn.

As shown on the Flood Boundary and Floodway Map (Exhibit 2), the floodway boundaries were determined at cross sections; between cross sections, the boundaries were interpolated. In cases where the boundaries of the floodway and the 100-year flood are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and the boundary of the 100-year flood is termed the floodway fringe. The floodway fringe thus encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.

BEST COPY AVAILABLE

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	WITH FLOODWAY (NGVD)	WITHOUT FLOODWAY (NGVD)	DIFFERENCE
MISSOURI RIVER							
A	379.2	8690	161,586	2.2	764.0	763.7	0.3
B	380.0	9986	156,247	2.2	764.1	763.8	0.3
C	380.7	7841	153,281	2.3	764.3	764.0	0.3
D	381.3	7025	130,871	2.7	764.4	764.1	0.3
E	381.9	7115	121,683	2.4	764.5	764.2	0.3
F	382.5	6500	118,345	3.0	764.7	764.4	0.3
G	383.5	3015	65,361	5.3	765.0	764.7	0.3
H	384.1	3910	84,094	4.2	765.7	764.9	0.8
I	384.4	4560	91,495	3.8	765.9	765.0	0.9
J	385.1	5830	117,431	2.9	766.4	765.1	1.3
K	385.9	4520	86,645	4.0	766.5	765.1	1.4
L	386.8	2670	47,363	7.4	766.5	765.2	1.3
M	387.1	2787	50,953	6.9	766.7	765.9	0.8
N	387.7	2850	47,620	7.4	767.6	766.4	1.2
O	388.2	3430	59,209	5.9	768.6	767.7	0.9
P	389.2	6240	102,964	3.4	770.3	769.4	0.9
Q	389.9	7980	129,132	2.7	770.8	769.8	1.0
R	390.2	8464	139,366	2.5	770.9	769.9	1.0
S	391.2	8593	136,788	2.5	771.1	770.1	1.0
T	391.6	7877	89,875	3.0	771.1	770.1	1.0
U	392.0	8610	131,914	2.0	771.5	770.5	1.0
V	392.8	5280	86,999	3.1	771.6	770.6	1.0
W	393.4	3340	68,315	4.0	771.7	770.7	1.0

[1]MILES ABOVE MOUTH
[2]THIS WIDTH EXTENDS BEYOND COUNTY BOUNDARY

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

FLOODWAY DATA

MISSOURI RIVER

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	WITH FLOODWAY (NGVD)	WITHOUT FLOODWAY (NGVD)	DIFFERENCE
MISSOURI RIVER							
AU	403.0	9620	134,170	2.0	779.4	778.8	0.6
AV	403.2	9785	140,333	1.9	779.7	779.0	0.7
AW	403.6	11,195	139,955	1.8	779.9	779.2	0.7
AX	403.9	11,400	152,753	1.8	780.2	779.5	0.7
AY	404.4	11,600	151,835	1.8	780.4	779.7	0.7
AZ	404.7	11,200	148,549	1.8	780.6	779.8	0.8
BA	405.0	11,200	157,031	1.7	780.7	779.9	0.8
BB	405.7	11,000	145,720	1.8	780.8	780.1	0.7
BC	406.1	10,950	136,083	2.0	780.9	780.1	0.8
BD	406.3	10,300	118,380	2.3	780.9	780.1	0.8
BE	406.9	9500	104,732	2.6	781.0	780.2	0.8
BF	407.3	9300	103,874	2.6	781.2	780.4	0.8
BG	407.7	10,050	108,368	2.5	781.3	780.5	0.8
BH	408.4	9400	70,865	3.8	781.3	780.5	0.8
BI	409.0	7650	84,986	3.2	782.2	781.7	0.5
BJ	409.7	7650	89,421	3.0	782.6	782.0	0.6
BK	410.1	7250	89,721	3.0	782.8	782.1	0.7
BL	410.7	6025	72,503	3.7	783.0	782.4	0.6
BM	411.5	4500	61,322	4.4	783.4	782.7	0.7
BN	411.8	3485	41,098	6.6	783.4	782.7	0.7
BO	412.2	3450	43,558	6.2	783.6	783.1	0.5
BP	412.5	4350	55,154	4.9	784.5	783.7	0.8
BQ	412.9	5110	57,670	4.7	784.8	783.9	0.9
BR	413.2	5385	65,224	4.1	785.2	784.3	0.9
BS	413.5	7340	93,532	2.9	785.9	784.9	1.0
BT	413.8	7660	95,770	2.8	786.0	785.1	0.9

[1]MILES ABOVE MOUTH
[2]THIS WIDTH EXTENDS BEYOND COUNTY BOUNDARY

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

FLOODWAY DATA

MISSOURI RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	WITH FLOODWAY (NGVD)	WITHOUT FLOODWAY (NGVD)	DIFFERENCE
MISSOURI RIVER							
X	394.0	2613	52,621	5.2	771.7	770.7	1.0
Y	395.1	1594	34,845	7.7	772.1	771.1	1.0
Z	395.6	2000	44,334	6.1	772.7	771.7	1.0
AA	396.0	1682	36,365	7.4	772.7	771.8	0.9
AB	396.3	1650	36,304	7.4	773.0	772.0	1.0
AC	396.7	1579	34,579	7.8	773.1	772.2	0.9
AD	397.0	1598	31,695	8.5	773.7	772.7	1.0
AE	397.3	1647	34,023	7.9	773.9	772.9	1.0
AF	397.6	1561	35,254	7.6	774.7	773.9	0.8
AG	397.8	1454	33,501	8.1	775.2	774.3	0.9
AH	398.4	1365	31,009	8.7	775.8	775.2	0.6
AI	398.8	1355	34,291	7.9	776.5	775.7	0.8
AJ	399.3	1899	43,167	6.2	777.3	776.7	0.6
AK	399.8	2389	51,794	5.2	777.7	777.1	0.6
AL	400.0	3309	62,908	4.3	777.8	777.3	0.5
AM	400.3	5205	89,715	3.0	778.2	777.6	0.6
AN	400.7	7783	131,263	2.1	778.6	777.9	0.7
AO	401.1	8908	137,700	2.0	778.7	778.1	0.6
AP	401.4	9965	156,759	1.7	779.0	778.4	0.6
AQ	401.7	8435	133,273	2.0	779.0	778.4	0.6
AR	401.7	8435	133,273	1.9	779.2	778.6	0.6
AS	402.6	9060	135,777	2.0	779.3	778.7	0.6
AT	402.8	9140	122,988	2.2	779.3	778.7	0.6

[1]MILES ABOVE MOUTH
[2]THIS WIDTH EXTENDS BEYOND COUNTY BOUNDARY

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

FLOODWAY DATA

MISSOURI RIVER

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	WITH FLOODWAY (NGVD)	WITHOUT FLOODWAY (NGVD)	DIFFERENCE
MISSOURI RIVER							
BU	414.1	7370[4]	89,012	3.0	786.1	785.2	0.9
BV	414.3	7275[4]	90,050	3.0	786.2	785.3	0.9
BW	414.7	8130[4]	99,958	2.7	786.5	785.5	1.0
BX	415.0	7420[4]	100,376	2.7	786.6	785.7	0.9
BY	415.4	7500[4]	101,496	2.7	786.8	785.9	0.9
BZ	415.9	7600[4]	82,253	3.3	786.8	785.9	0.9
CA	416.3	7800[4]	97,586	2.8	787.3	786.6	0.7
CB	416.6	6800[4]	73,418	3.7	787.3	786.6	0.7
CC	416.9	7900[4]	81,842	3.3	787.6	786.9	0.7
CD	418.0	6063[4]	65,189	4.1	788.2	787.5	0.7
CE	419.0	5400[4]	62,493	4.3	788.8	788.0	0.8
CF	419.6	4920[4]	47,701	5.7	788.8	788.0	0.8
CG	420.5	5182[4]	35,152	7.7	789.4	788.4	1.0
GROVE CREEK							
A	10,100[2]	313	2657	3.5	817.3	816.5	0.8
B	10,900[2]	158	1257	7.3	817.7	817.0	0.7
BRILLS CREEK							
A	3955[3]	68[5]	237	6.7	790.0	790.0	0.0
B	5119[3]	62[5]	268	6.0	796.5	796.5	0.0
C	5752[3]	49[5]	214	7.5	798.8	798.8	0.0

[1]MILES ABOVE MOUTH
[2]FEET ABOVE CONFLUENCE WITH PLATTE RIVER
[3]FEET ABOVE CONFLUENCE WITH BRENNER BRANCH
[4]THIS WIDTH EXTENDS BEYOND COUNTY BOUNDARY
[5]THIS WIDTH EXTENDS WITHIN CITY OF WESTON

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

FLOODWAY DATA

MISSOURI RIVER - GROVE CREEK - BRILLS CREEK

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	WITH FLOODWAY (NGVD)	WITHOUT FLOODWAY (NGVD)	DIFFERENCE
WALNUT CREEK							
A	2180	562	657	8.68	775.5	775.5	0.0
B	2931	64	506	11.27	780.5	780.4	0.1
C	4210	106	603	9.46	784.2	784.2	0.0
D	7417	60	346	13.39	804.4	803.9	0.5
E	8290	238	1024	4.53	832.5	831.7	0.8
F	9418	300	1433	3.24	833.8	832.9	0.9
G	10,409	235	1199	3.87	834.8	833.8	1.0
BURLINGTON CREEK							
A	0.745[2]	78	687	5.6	763.9	763.9	0.0
B	1.203[2]	120	759	5.1	775.9	775.7	0.2
PLATTE RIVER							
A	2861[3]	1917[5]	28,699	3.0	780.0	779.1	0.9
B	5583[3]	1435[5]	15,504	5.6	780.7	779.9	0.8
C	9971[3]	2758[6]	60,069	1.4	786.5	785.8	0.7
D	12,059[3]	2533[7]	43,428	2.0	786.6	785.9	0.7
BRUSH CREEK							
A	5.99[4]	205[8]	1863	3.3	824.9	824.9	0.0

[1]FEET ABOVE DAM
[2]MILES ABOVE MOUTH
[3]FEET ABOVE CORPORATE LIMITS OF CITY OF PLATTE CITY
[4]MILES ABOVE CONFLUENCE WITH MISSOURI RIVER
[5]THIS WIDTH EXTENDS WITHIN CITY OF PLATTE CITY
[6]THIS WIDTH EXTENDS WITHIN CITY OF TRACY
[7]THIS WIDTH EXTENDS WITHIN CITY OF PLATTE CITY AND CITY OF TRACY
[8]THIS WIDTH EXTENDS WITHIN CITY OF KANSAS CITY

REVISED: 6/4/87

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

FLOODWAY DATA

WALNUT CREEK - BURLINGTON CREEK - PLATTE RIVER - BRUSH CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	WITH FLOODWAY (NGVD)	WITHOUT FLOODWAY (NGVD)	DIFFERENCE
BEE CREEK							
A	1376	252[5]	2176	3.7	878.8	877.9	0.7
BEE CREEK TRIBUTARY							
A	693[2]	245[3]	1114	1.7	874.2	874.1[4]	0.1
B	2889[2]	153[3]	1480	1.3	878.7	878.5	0.2

[1] FEET ABOVE CONFLUENCE WITH BEE CREEK TRIBUTARY
[2] FEET ABOVE CONFLUENCE WITH BEE CREEK
[3] THIS WIDTH EXTENDS WITHIN CITY OF DEARBORN
[4] ELEVATIONS WITHOUT CONSIDERING BACKWATER EFFECT FROM BEE CREEK
[5] THIS WIDTH IS WITHIN CITY OF DEARBORN

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

FLOODWAY DATA

BEE CREEK - BEE CREEK TRIBUTARY

BEST COPY AVAILABLE

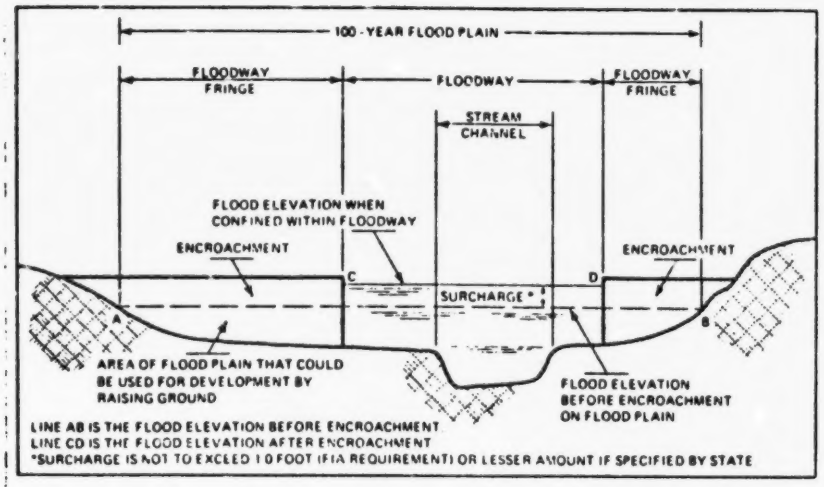

100-YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE *
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE AB IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE CD IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE IS NOT TO EXCEED 1.0 FOOT (FIA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE

FIGURE 2. Floodway Schematic

The floodways in this report are recommended to local agencies as minimum standards that can be adopted or that can be used as a basis for additional studies.

5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, the Federal Insurance Administration has developed a process to transform the data from the engineering study into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors, and flood insurance zone designations for each flooding source affecting the unincorporated areas of Platte County.

5.1 Reach Determinations

Reaches are defined as lengths of watercourses having relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference does not have a variation greater than that indicated in the following table for more than 20 percent of the reach.

Average Difference Between 10- and 100-year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

BEST COPY AVAILABLE

The locations of the reaches determined for the unincorporated areas of Platte County are shown on the Flood Profiles (Exhibit 1) and are summarized in the Flood Insurance Zone Data Table (Table 3).

5.2 Flood Hazard Factors

The Flood Hazard Factor (FHF) is the Federal Insurance Administration device used to correlate flood information with insurance rate tables. Correlations between property damage from floods and their Flood Hazard Factors are used to set actuarial insurance premium rate tables based on Flood Hazard Factors from 005 to 200.

The Flood Hazard Factor for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations expressed to the nearest one-half foot, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the Flood Hazard Factor is 005; if the difference is 1.4 feet, the Flood Hazard Factor is 015; if the difference is 5.0 feet, the Flood Hazard Factor is 050. When the difference between the 10- and 100-year water-surface elevations is greater than 10.0 feet, accuracy for the Flood Hazard Factor is to the nearest foot.

5.3 Flood Insurance Zones

After the determination of reaches and their respective Flood Hazard Factors, the entire unincorporated area of Platte County was divided into zones, each having a specific flood potential or hazard. Each zone was assigned one of the following flood insurance zone designations:

Zone A:	Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or Flood Hazard Factors determined.
Zones A2-A5, A7-A9, A11, A15, A17, A18:	Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown, and zones subdivided according to Flood Hazard Factor.
Zone B:	Areas between the Special Flood Hazard Area and the limits of the 500-year flood, including areas of the 500-year flood plain that are protected from the 100-year

BEST COPY AVAILABLE

flood by dike, levee, or other water control structure; or areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.

Zone C: Areas of minimal flooding.

Table 3, "Flood Insurance Zone Data," summarizes the flood elevation differences, Flood Hazard Factors, flood insurance zones, and base flood elevations for flooding source studied in detail in the community.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the unincorporated areas of Platte County is, for insurance purposes, the principal result of the Flood Insurance Study. This map (published separately) contains the official delineation of flood insurance zones and base flood elevation lines. Base flood elevation lines show the locations of the expected whole-foot water-surface elevations of the base (100-year) flood. This map is developed in accordance with the latest flood insurance map preparation guidelines published by the Federal Insurance Administration.

6.0 OTHER STUDIES

Flood Insurance Studies for the incorporated areas of Dearborn, Edgerton, Farley, Kansas City, Parkville, Platte City, Riverside, Lewis and Clark, Tracy, Weston, and Leavenworth are in agreeement with this Flood Insurance Study (References 8, 4, 12, 7, 13, 6, 14, 15, 16, 5, and 17). Flood Insurance Studies for Leavenworth County, Buchanan County, Wyandotte County, Clinton County, and Clay County are also in agreement with this Flood Insurance Study (References 18, 19, 20, 21, and 22).

This report either supersedes or is compatible with all previous studies published on streams studied in this report and should be considered authoritative for the purposes of the National Flood Insurance Program.

7.0 LOCATION OF DATA

Survey, hydrologic, hydraulic and other pertinent data used in this study can be obtained by contacting the office of the Federal Insurance Administration, Regional Director, 911 Walnut Street, Kansas City, Missouri 64106.

BEST COPY AVAILABLE

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
MISSOURI RIVER							
REACH 1	0165	–8.7	–2.6	5.6	085	A17	VARIES–SEE MAP
REACH 2	0150,0165	–7.4	–0.9	5.6	075	A15	VARIES–SEE MAP
REACH 3	0150	–5.6	–0.5	5.0	055	A11	VARIES–SEE MAP
REACH 4	0100,0135,0150	–4.0	–0.9	4.8	040	A8	VARIES–SEE MAP
REACH 5	0100	–3.4	–0.9	2.1	035	A7	VARIES–SEE MAP
REACH 6	0050,0100	–4.3	–1.1	4.3	045	A9	VARIES–SEE MAP
REACH 7	0025,0050,0100	–2.1	–0.5	2.8	020	A4	VARIES–SEE MAP
REACH 8	0025	–2.3	–0.5	1.3	025	A5	VARIES–SEE MAP
GROVE CREEK							
REACH 1[4]	0075	–2.5	–0.8	1.1	025	A5	VARIES–SEE MAP
BRILLS CREEK							
REACH 1[5]	0050	–2.5	–0.6	1.1	025	A5	VARIES–SEE MAP
WALNUT CREEK							
REACH 1	0165	–1.0	–0.3	0.2	010	A2	VARIES–SEE MAP
REACH 2	0165	–1.8	–0.5	0.3	020	A4	VARIES–SEE MAP
REACH 3	0165	–3.6	–2.2	0.3	035	A7	VARIES–SEE MAP
REACH 4	0155,0165	–1.5	–0.3	0.3	015	A3	VARIES–SEE MAP

[1]FLOOD INSURANCE RATE MAP PANEL
[2]WEIGHTED AVERAGE
[3]ROUNDED TO NEAREST FOOT
[4]DATA FOR THIS REACH TAKEN FROM CITY OF EDGERTON, MO FIS
[5]DATA FOR THIS REACH TAKEN FROM CITY OF WESTON, MO FIS

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

FLOOD INSURANCE ZONE DATA

MISSOURI RIVER - GROVE CREEK - BRILLS CREEK - WALNUT CREEK

BEST COPY AVAILABLE

BEST COPY AVAILABLE

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND 10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)	FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
BURLINGTON CREEK							
REACH 1	0170	−5.1	−1.2	1.9	050	A10	VARIES–SEE MAP
REACH 2	0170	−1.8	−0.6	1.1	020	A4	VARIES–SEE MAP
PLATTE RIVER							
REACH 1[4]	0125	−5.3	−1.9	2.2	055	A11	VARIES–SEE MAP
REACH 2[4]	0125	−8.9	−5.4	2.7	090	A18	VARIES–SEE MAP
BRUSH CREEK							
REACH 1[5]	0155	−2.3	−0.7	1.4	025	A5	VARIES–SEE MAP
REACH 2[5]	0155	−2.1	−0.5	1.2	020	A4	VARIES–SEE MAP
BEE CREEK							
REACH 1[6]	0075	−2.6	−0.8	1.5	025	A5	VARIES–SEE MAP
BEE CREEK TRIBUTARY							
REACH 1[6]	0075	−1.6	−0.2	0.9	015	A3	VARIES–SEE MAP
MISSOURI RIVER							
BACKWATER REACH[5]	0170	−9.2	−3.1	5.8	090	A18	VARIES–SEE MAP

[1]FLOOD INSURANCE RATE MAP PANEL
[2]WEIGHTED AVERAGE
[3]ROUNDED TO NEAREST FOOT
[4]DATA FOR THIS REACH TAKEN FROM CITY OF PLATTE CITY, MO FIS
[5]DATA FOR THIS REACH TAKEN FROM CITY OF KANSAS CITY, MO FIS
[6]DATA FOR THIS REACH TAKEN FROM CITY OF DEARBORN, MO FIS

REVISED: 6/4/87

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

FLOOD INSURANCE ZONE DATA

BURLINGTON CREEK - PLATTE RIVER - BRUSH CREEK - BEE CREEK - BEE CREEK TRIBUTARY - MISSOURI RIVER

8.0 REFERENCES AND BIBLIOGRAPHY

1. U.S. Army Corps of Engineers, Missouri River Reevaluation Study, 1962.

2. ———————, Hydrology Study for Burlington Creek, June 1975; Hydrology Study for Walnut Creek, June 1977.

3. U.S. Water Resources Council, Bulletin No. 15, A Uniform Technique for Determining Flood Flow Frequencies, December 1967.

4. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Insurance Study, City of Edgerton, Missouri, (in progress).

5. ———————, Flood Insurance Study, City of Weston, Missouri, (in progress).

6. ———————, Flood Insurance Study, City of Platte City, Missouri, May 1978.

7. ———————, Flood Insurance Study, City of Kansas City, Kansas, June 1976.

8. ———————, Flood Insurance Study, City of Dearborn, Missouri, (in progress).

9. U.S. Army Corps of Engineers, HEC-2 Water Surface Profiles, August 1969.

10. U.S. Geological Survey, 7.5 Minute Series Quadrangles, Scale 1:24000, Contour Interval 10 feet: Walnut Creek and Burlington Creek, Parkville, Missouri, 1975; Missouri River, Parkville, 1975; Wolcott, 1975; Platte City, 1975; Leavenworth, 1975; Tracy, 1961; Weston, 1975; Oak Mills, 1961; Atchison East, 1960.

11. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, Platte County, Missouri, (unpublished).

12. ———————, Flood Insurance Study, City of Farley, Missouri, (in progress).

13. ———————, Flood Insurance Study, City of Parkville, Missouri, May 1978.

14. ———————, Flood Insurance Study, City of Riverside, Missouri, September 1977.

15. ———————, Flood Insurance Study, City of Lewis and Clark, Missouri, September 1978.

BEST COPY AVAILABLE

16. ———————, Flood Insurance Study, City of Tracy, Missouri, (in progress).

17. ———————, Flood Insurance Study, City of Leavenworth, Kansas, January 1978.

18. ———————, Flood Insurance Study, Leavenworth County, Kansas, (in progress).

19. ———————, Flood Insurance Study, Buchanan County, Missouri, August 1978.

20. ———————, Flood Insurance Study, Wyandotte County, Kansas, (in progress).

21. ———————, Flood Insurance Study, Clinton County, Missouri, (in progress).

22. ———————, Flood Insurance Study, Clay County, Missouri, (in progress).

BEST COPY AVAILABLE

9.0 REVISIONS DESCRIPTION (Revised June 4, 1987)

9.1 Purpose

The purpose of this Flood Insurance Study Revisions Description is to incorporate revised data into this currently effective Flood Insurance Study for the Unincorporated Areas of Platte County, Missouri. This Revisions Description is intended to provide updated information that aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

9.2 Acknowledgments

The hydraulic analyses for this Revisions Description were obtained from the Flood Insurance Study for the City of Kansas City, Platte and Jackson Counties, Missouri (Reference 1). The Federal Emergency Management Agency (FEMA) reviewed and accepted these data for purposes of this revision.

9.3 Scope

The entire reach of Burlington Creek within the unincorporated areas of Platte County, Missouri, was revised because of new information used in preparing the Flood Insurance Study for the City of Kansas City, Missouri.

9.4 Hydrologic and Hydraulic Analyses

The hydrologic analysis for Burlington Creek was not revised. However, the hydraulic analysis for Burlington Creek was revised by using the U.S. Army Corps of Engineers HEC-2 step-backwater computer program (Reference 2). The reanalysis of Burlington Creek resulted in an increase in elevations for the 10-, 50-, 100-, and 500-year frequency flood events. The cross sections used in the reanalysis of Burlington Creek were revised using new stream distances. The roughness coefficients (Manning's "n") for Burlington Creek ranged from 0.030 to 0.065 for the overbank, and 0.030 to 0.037 for the channel.

9.5 Other Studies

This revision was prepared concurrently with the revision to the Flood Insurance Study for the City of Riverside, Platte County, Missouri (Reference 3). These studies are in agreement. Also, this revision is in agreement with the Flood Insurance Study for the City of Kansas City, Missouri.

9.6 Location of Data

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, Old Federal Office Building, Room 300, 911 Walnut Street, Kansas City, Missouri 64106.

BEST COPY AVAILABLE

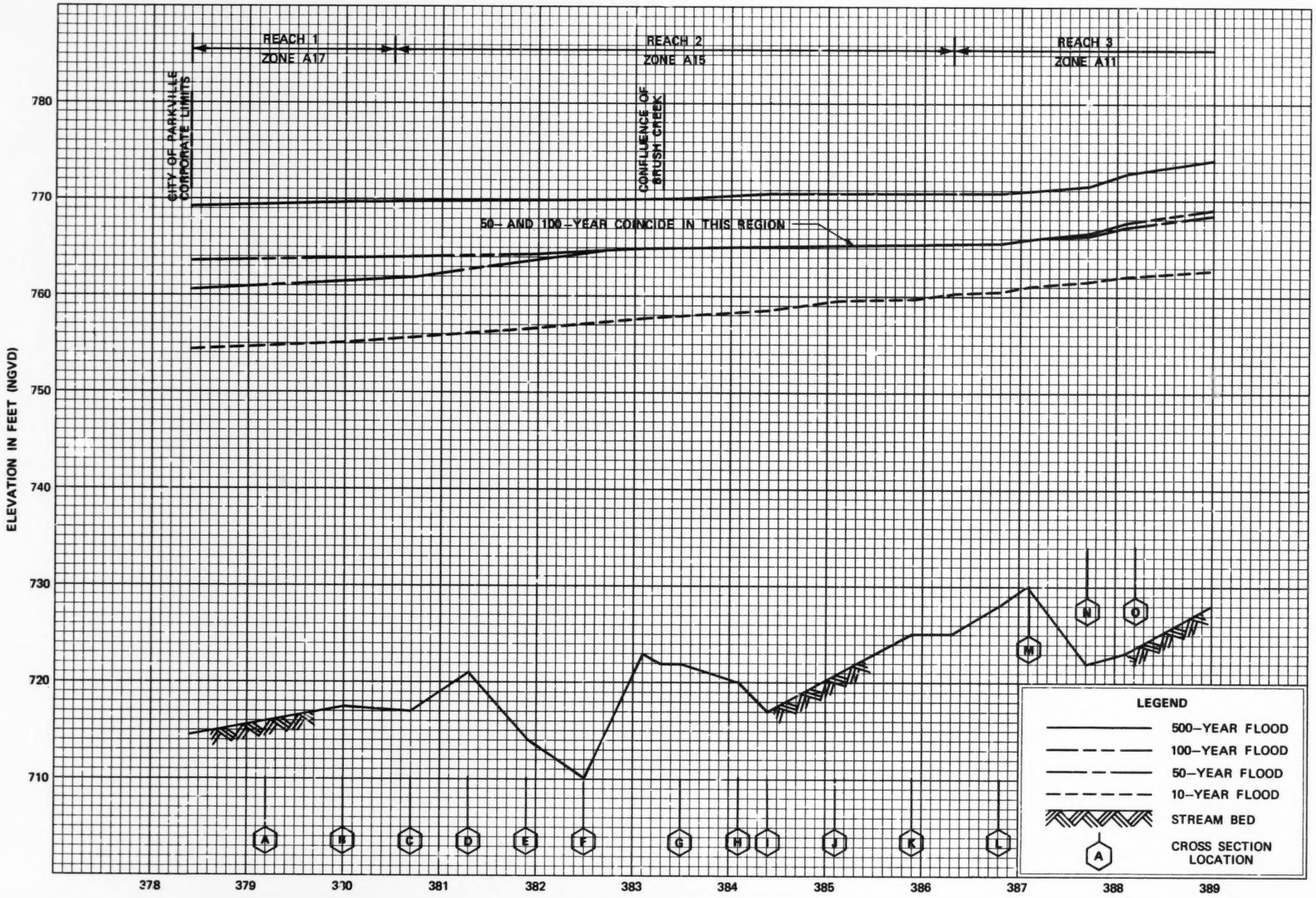
9.7 References and Bibliography

1. Federal Emergency Management Agency, Flood Insurance Study, City of Kansas City, Platte and Jackson Counties, Missouri, revised August 1986.

2. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water-Surface Profiles, Generalized Computer Program, Davis, California, April 1984.

3. Federal Emergency Management Agency, Flood Insurance Study, City of Riverside, Platte County, Missouri, revised June 1987.

BEST COPY AVAILABLE



FLOOD PROFILES

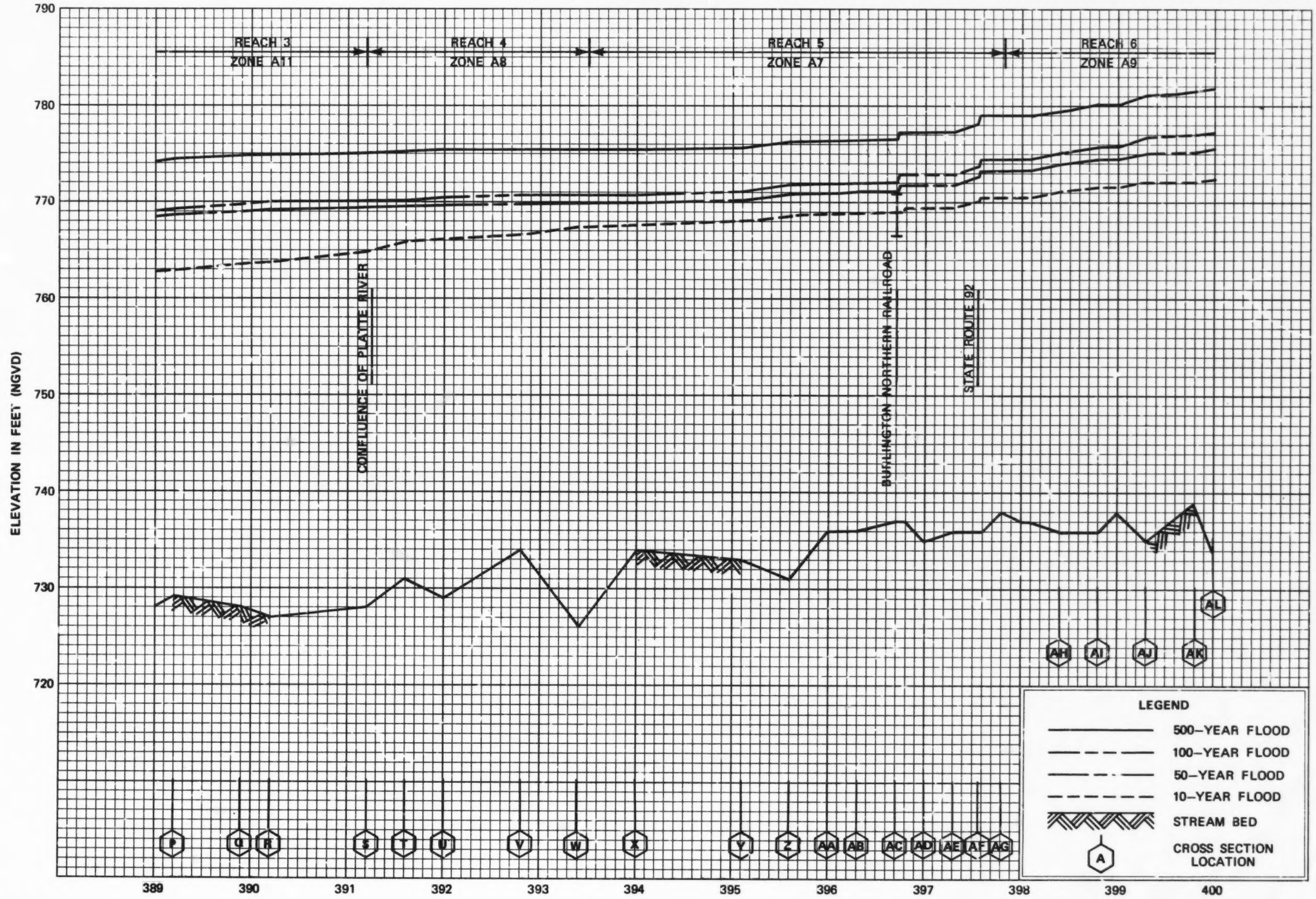
MISSOURI RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

01P

BEST COPY AVAILABLE



FLOOD PROFILES

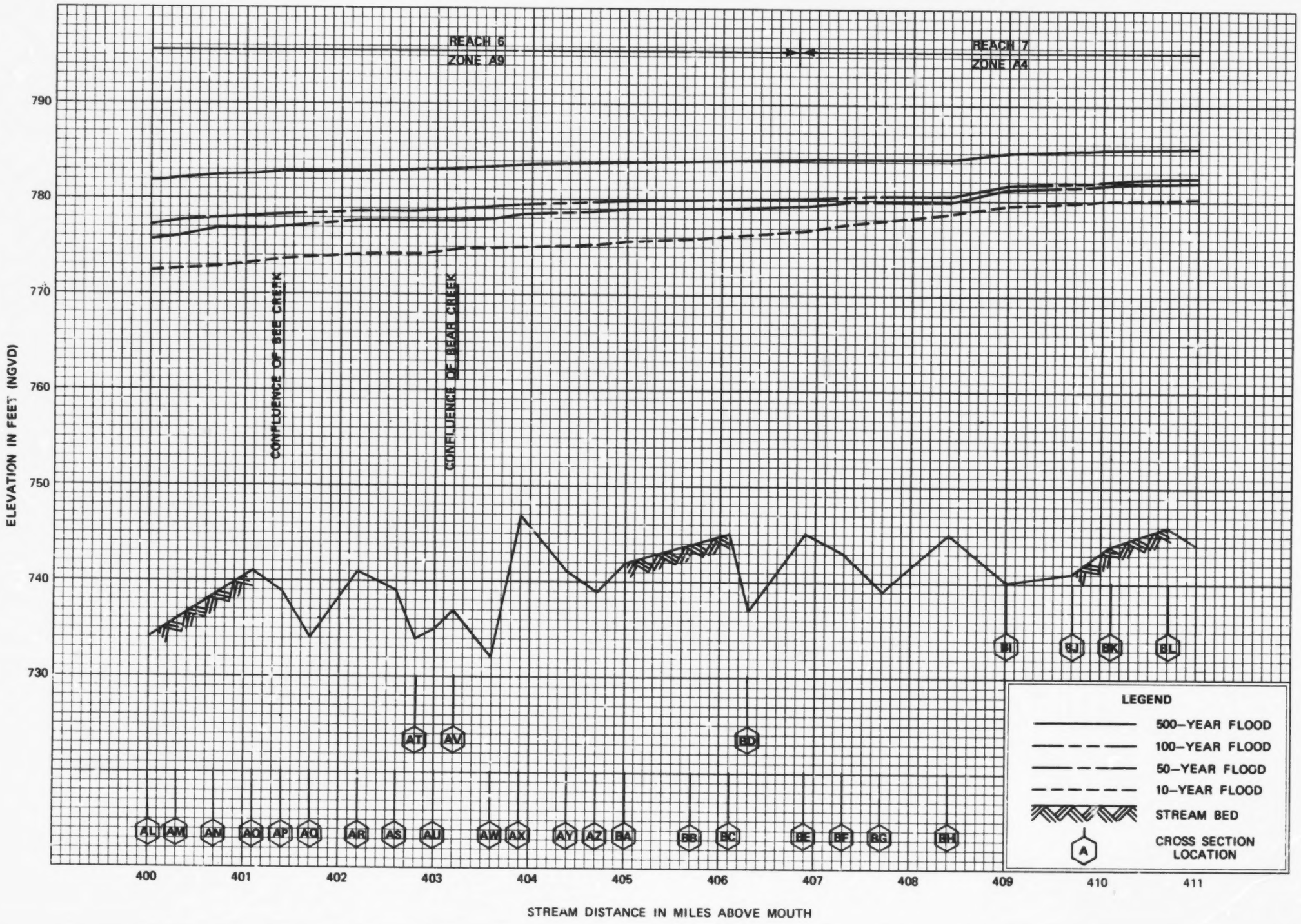
MISSOURI RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

02P

BEST COPY AVAILABLE



FLOOD PROFILES

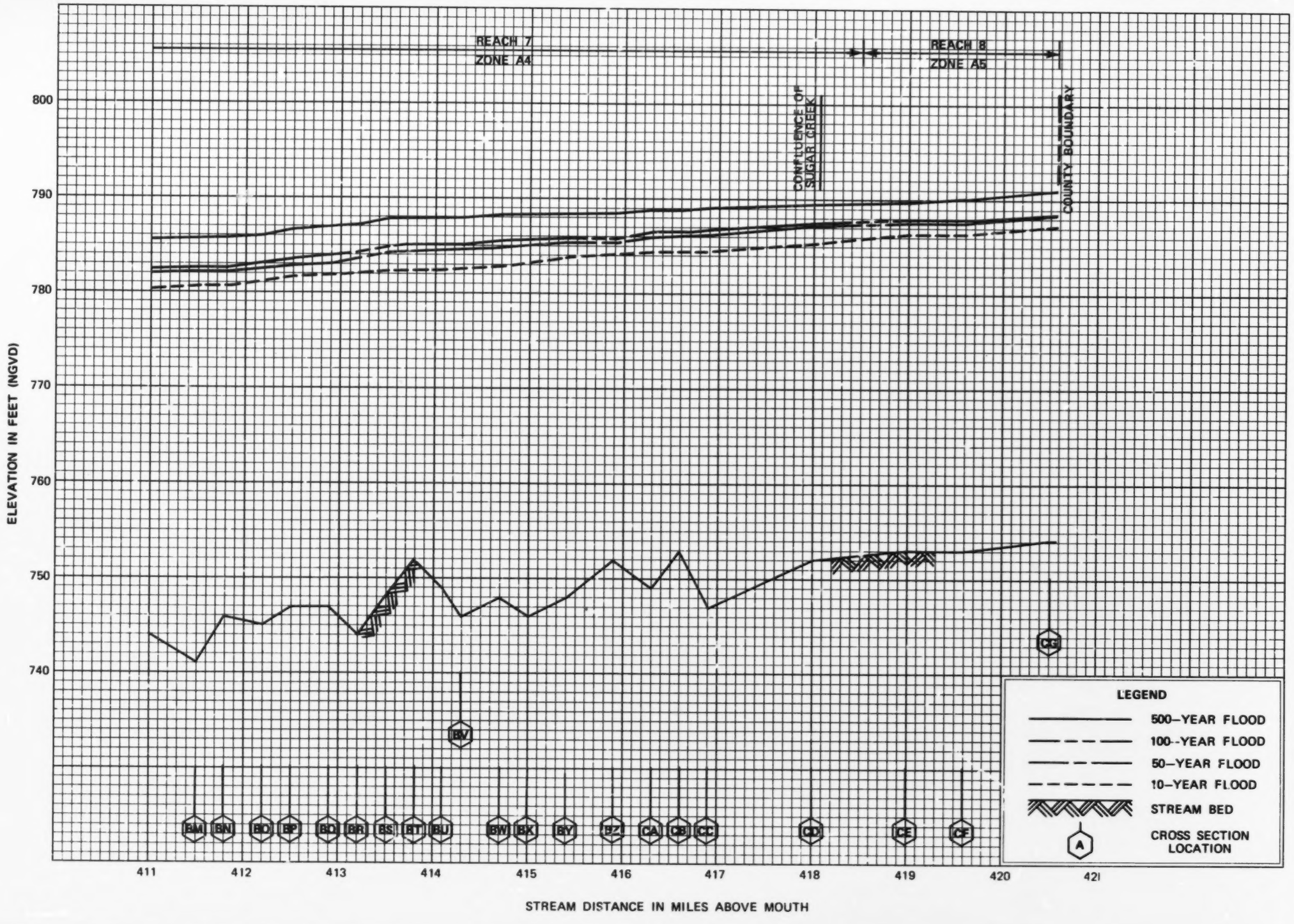
MISSOURI RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

03P

BEST COPY AVAILABLE



FLOOD PROFILES

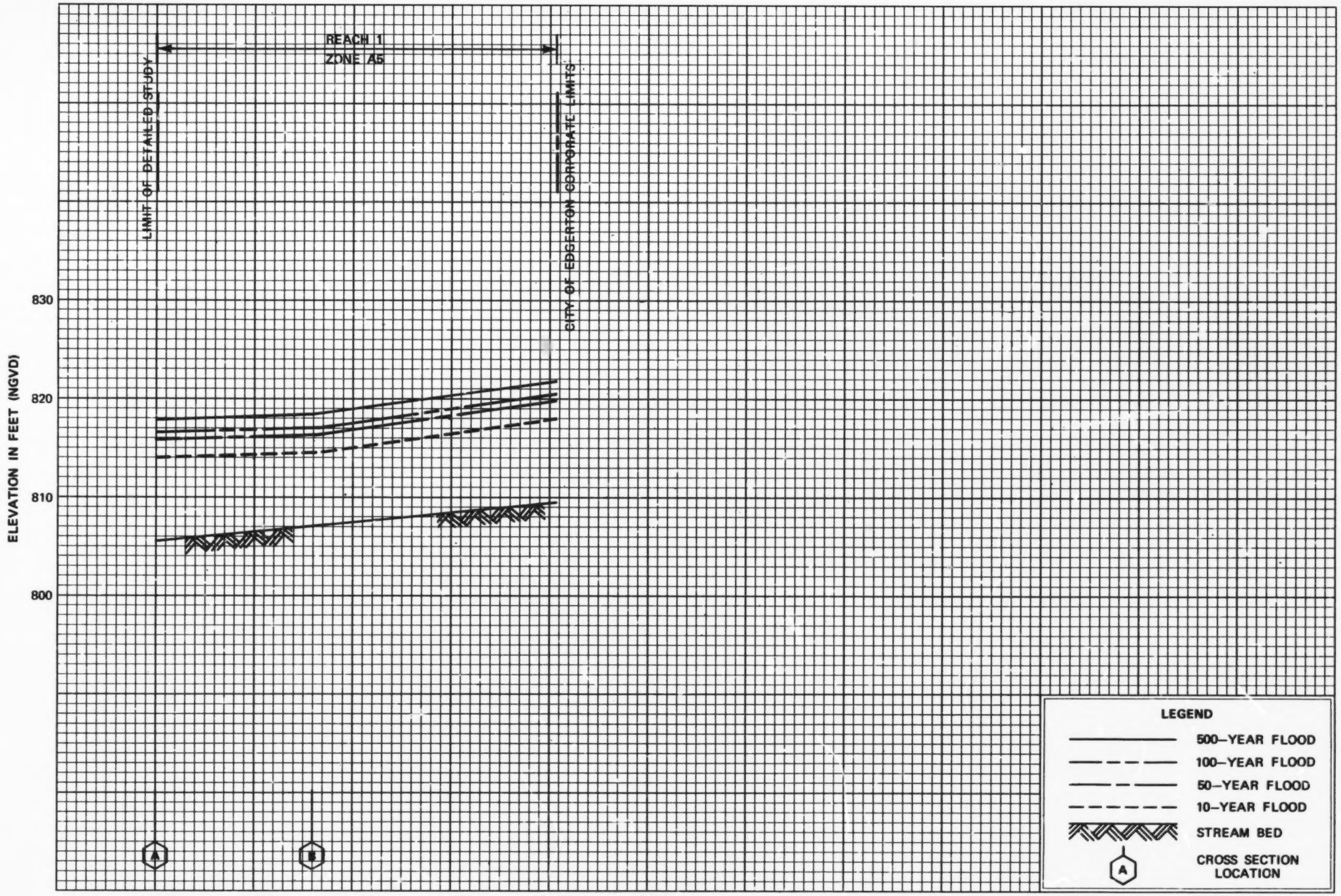
MISSOURI RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

04P

BEST COPY AVAILABLE



FLOOD PROFILES

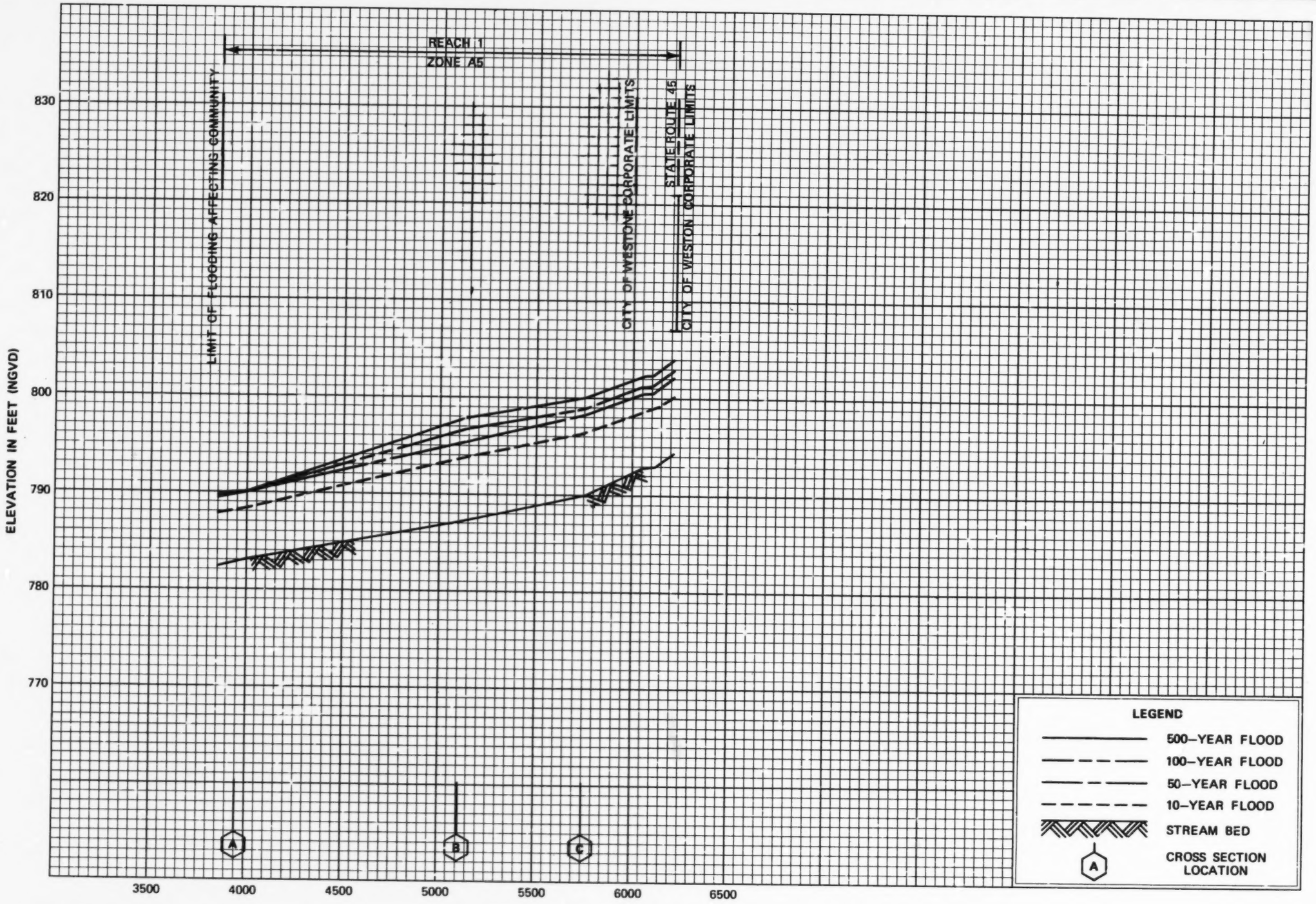
GROVE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

05P

BEST COPY AVAILABLE



FLOOD PROFILES

BRILLS CREEK

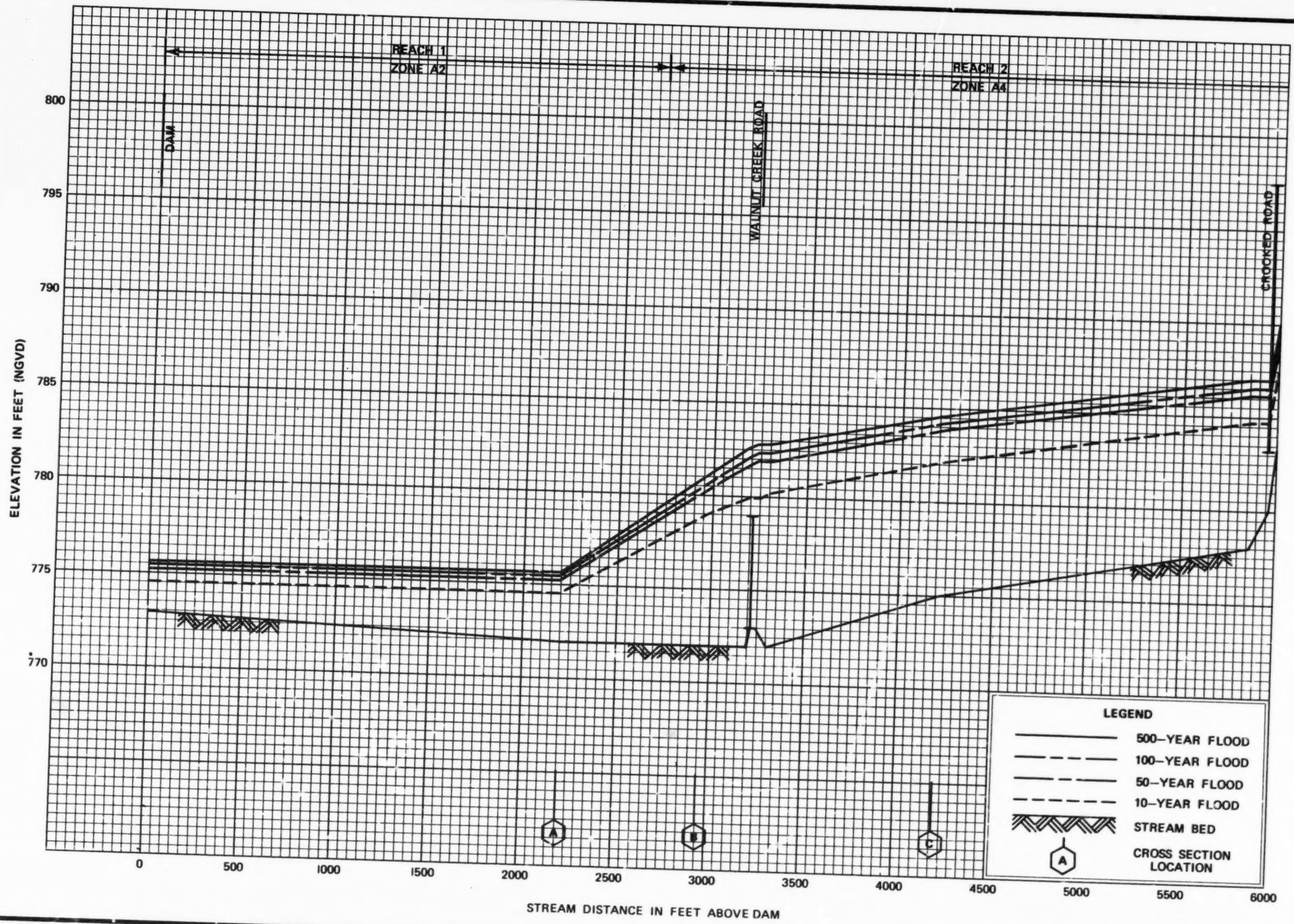
FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO

(UNINCORPORATED AREA)

06P

BEST COPY AVAILABLE



FLOOD PROFILES

WALNUT CREEK

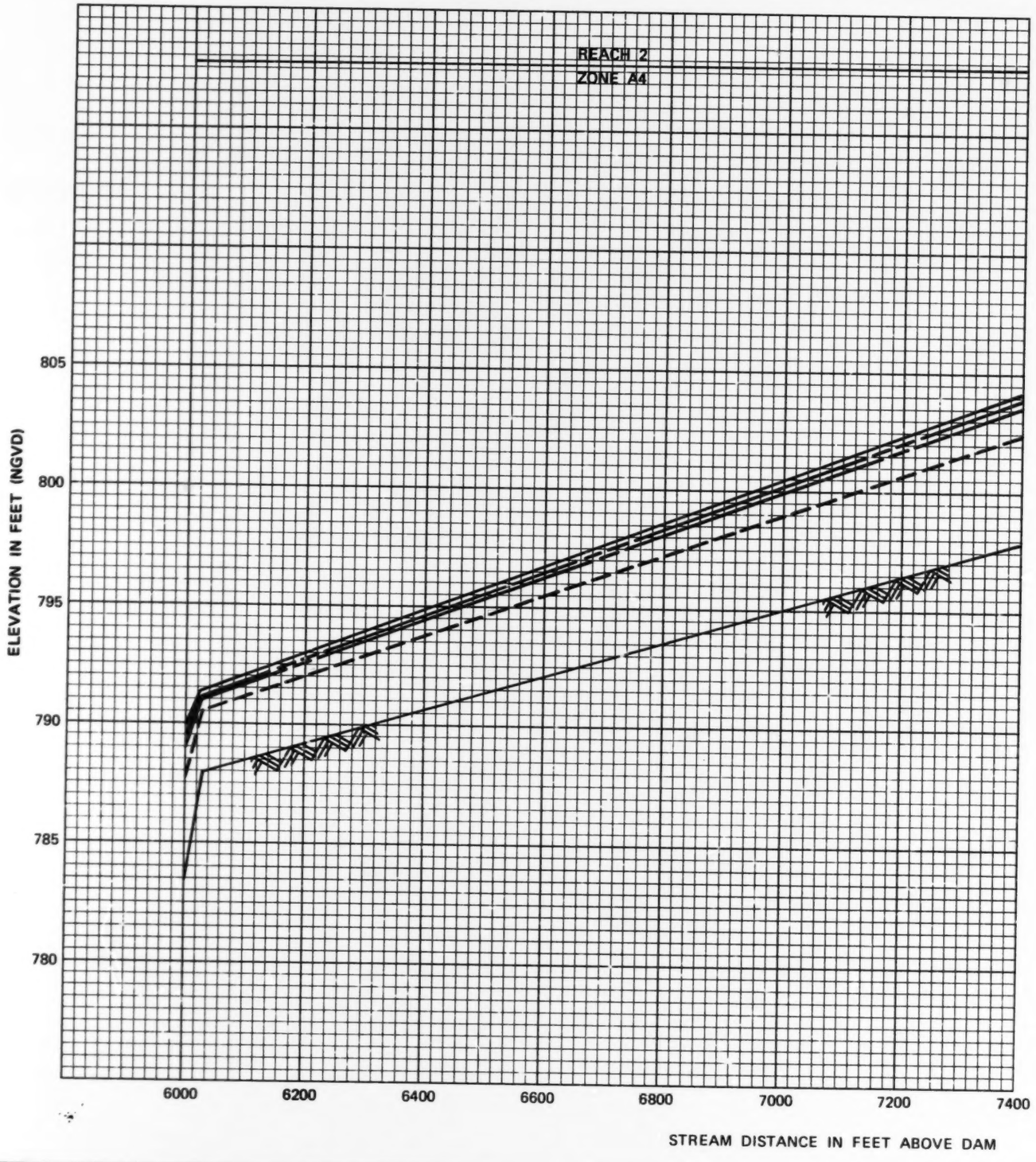
FEDERAL EMERGENCY MANAGEMENT AGENCY

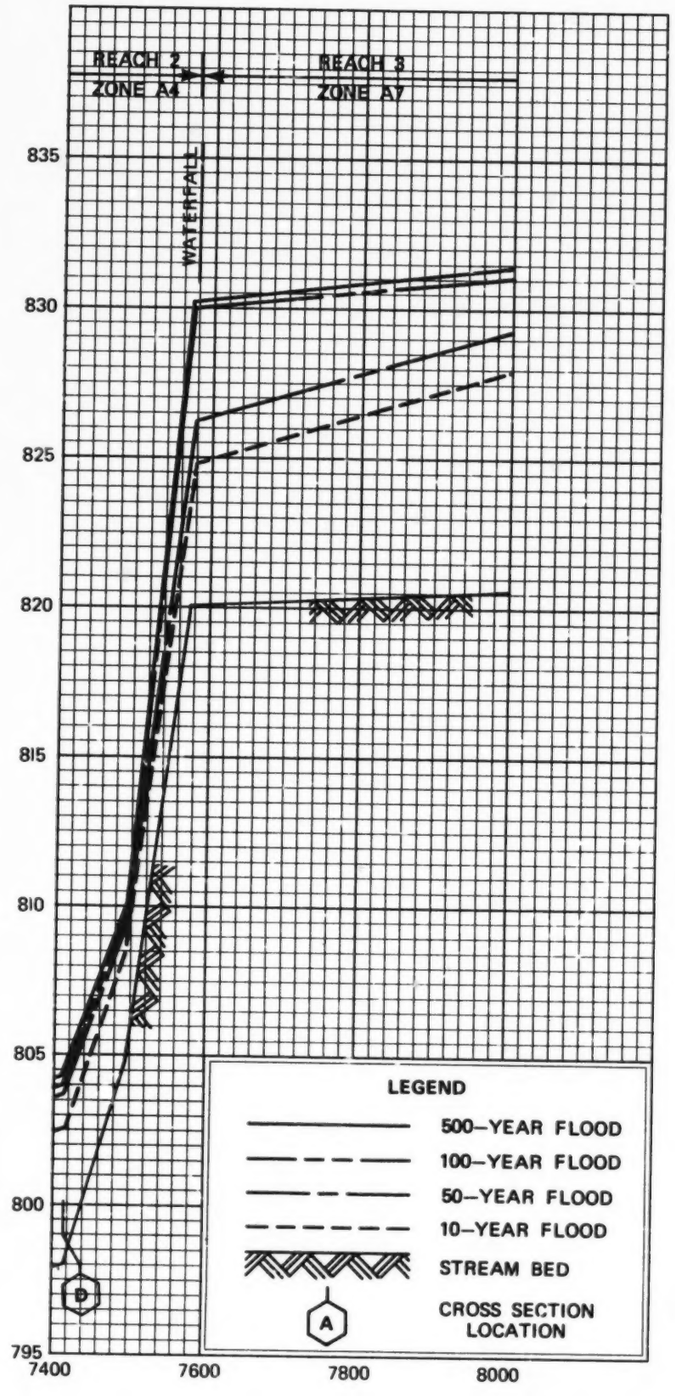
COUNTY OF PLATTE, MO

(UNINCORPORATED AREA)

07P

BEST COPY AVAILABLE





FLOOD PROFILES

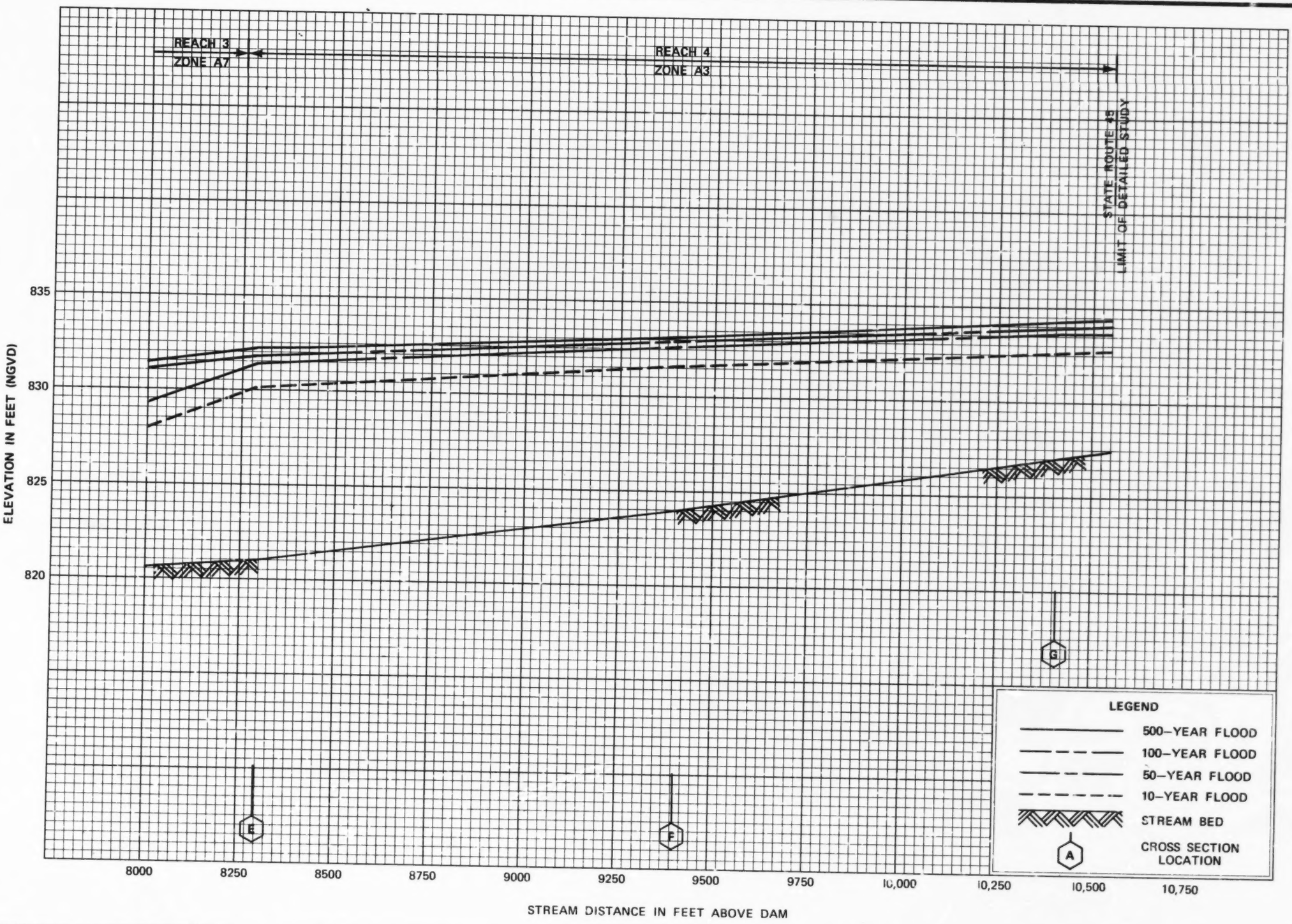
WALNUT CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

08P

BEST COPY AVAILABLE



FLOOD PROFILES

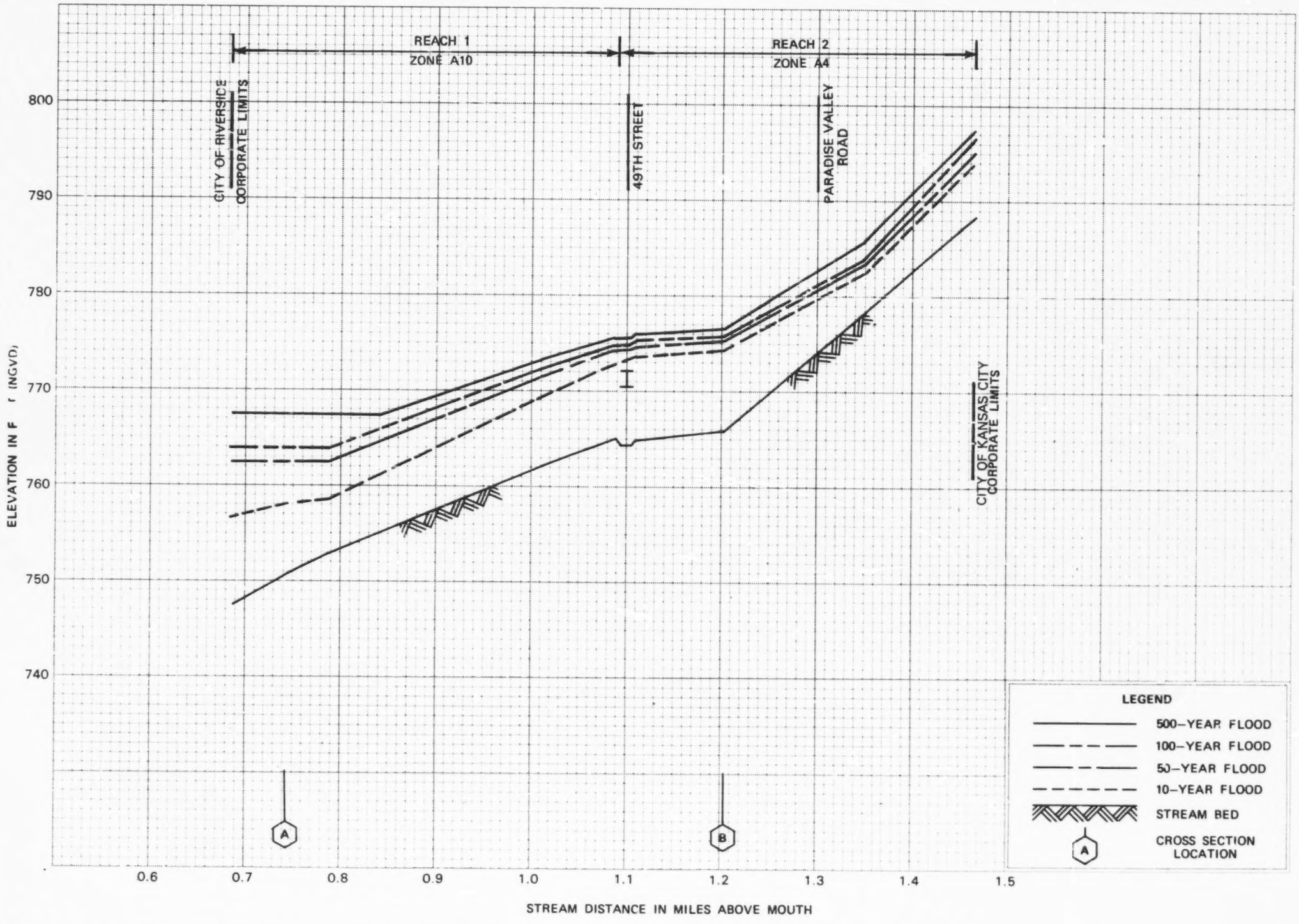
WALNUT CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

09P

BEST COPY AVAILABLE



FLOOD PROFILES

BURLINGTON CREEK

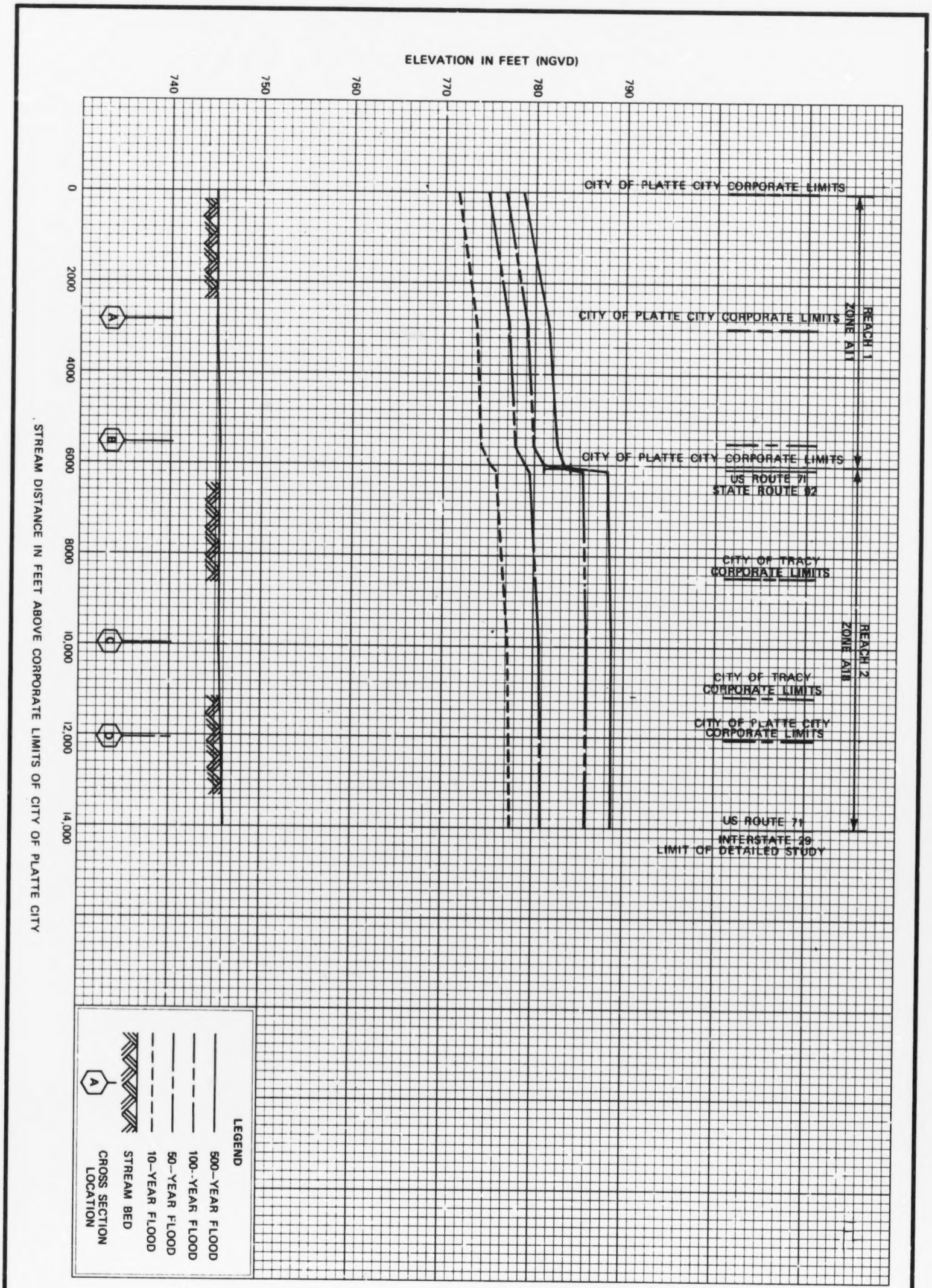
FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

10P

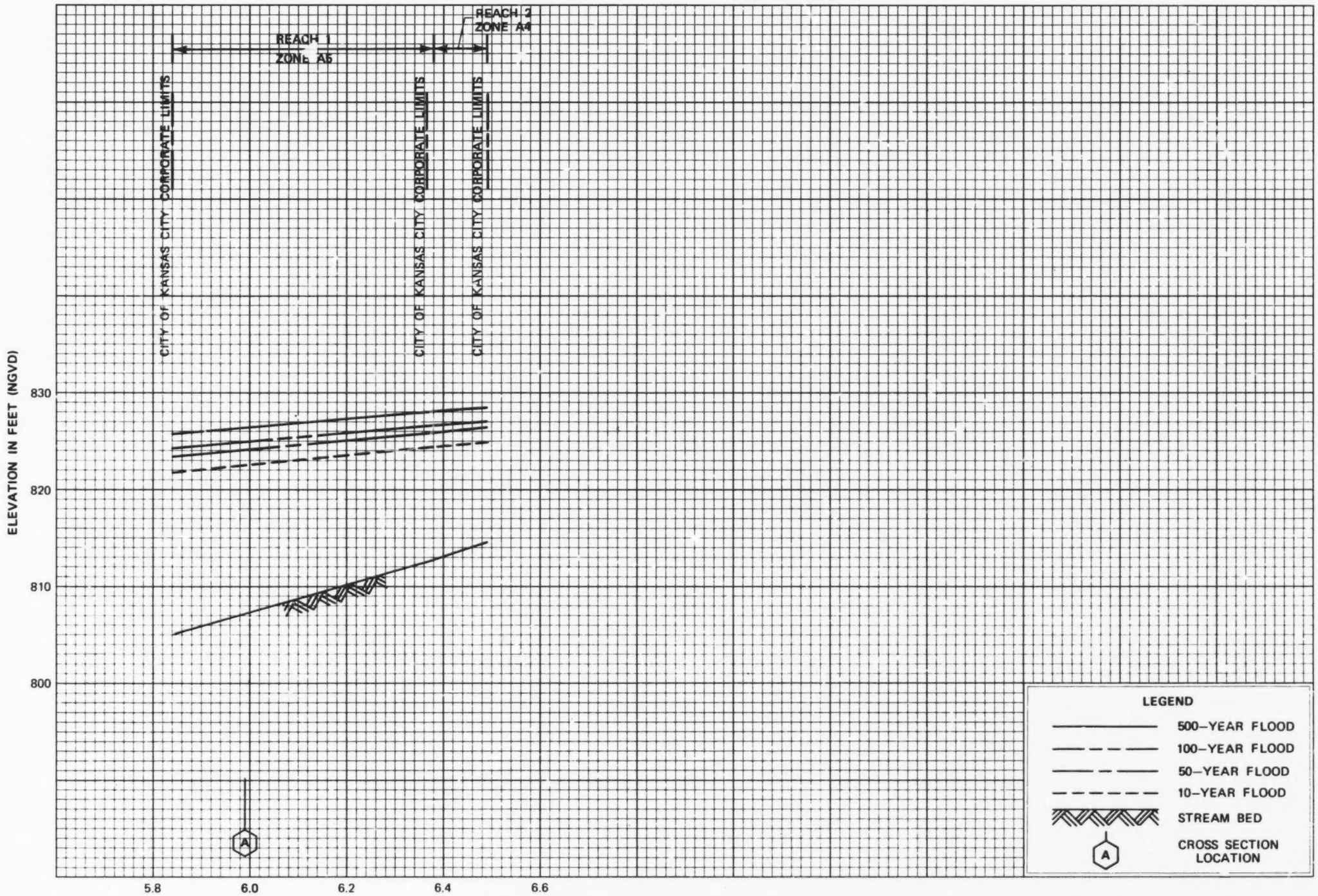
REVISED 6/4/87

BEST COPY AVAILABLE



11P	FEDERAL EMERGENCY MANAGEMENT AGENCY **COUNTY OF PLATTE, MO** (UNINCORPORATED AREA)	**FLOOD PROFILES** **PLATTE RIVER**

BEST COPY AVAILABLE



FLOOD PROFILES

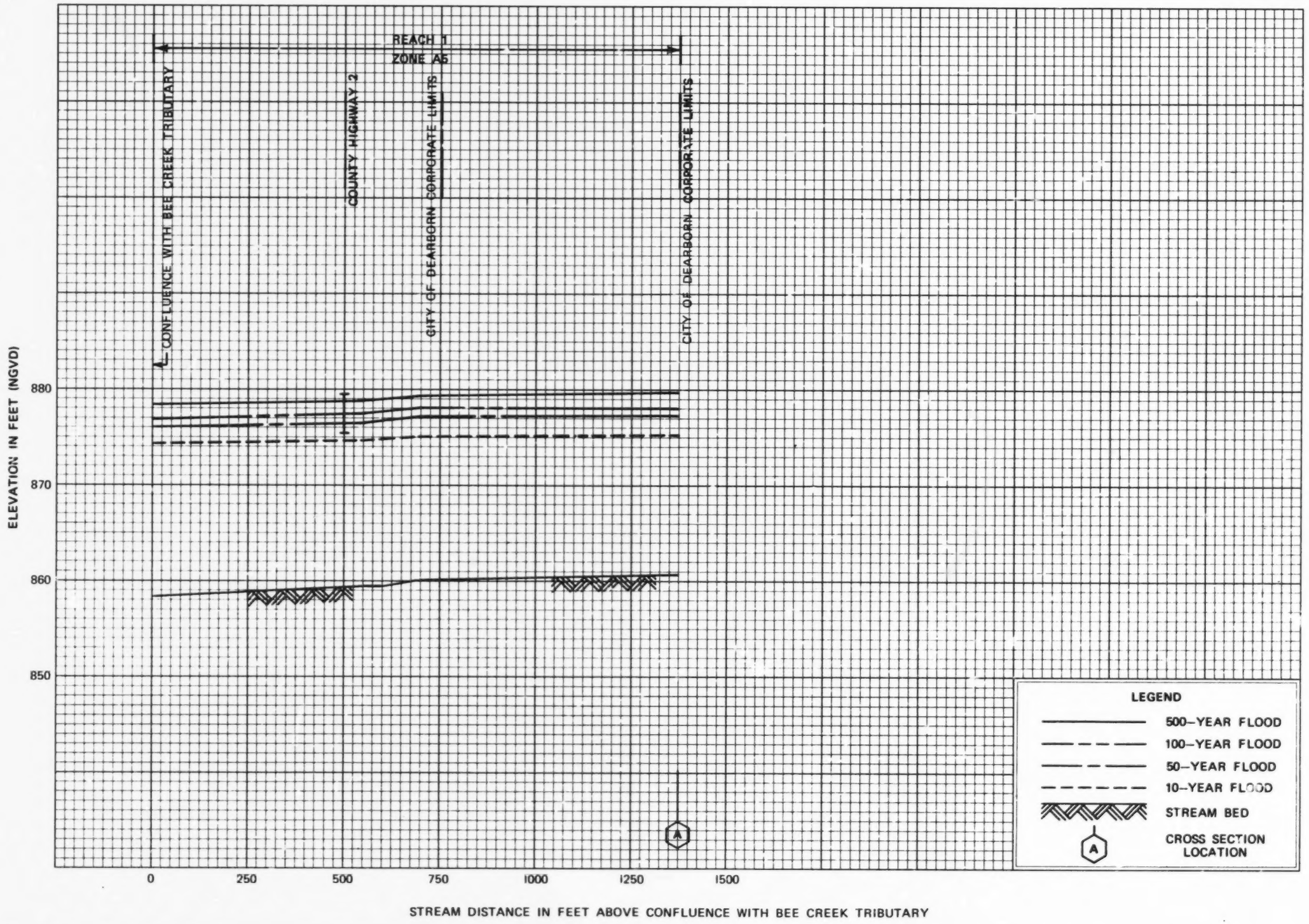
BRUSH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

12P

BEST COPY AVAILABLE



FLOOD PROFILES

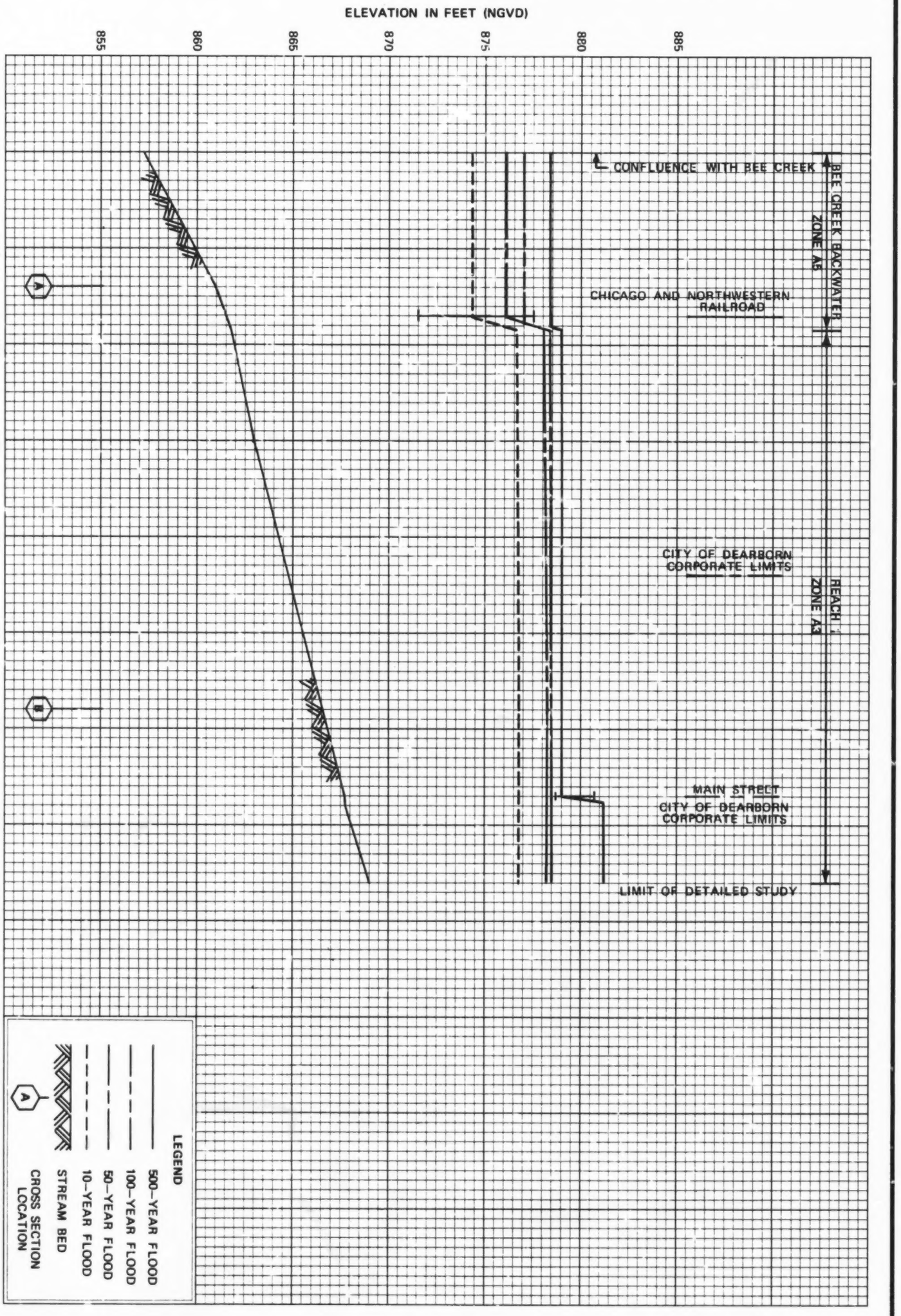
BEE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

13P

BEST COPY AVAILABLE



FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF PLATTE, MO
(UNINCORPORATED AREA)

FLOOD PROFILES

BEE CREEK TRIBUTARY

14P

36

BEST COPY AVAILABLE